

ADDENDUM NO. 2

Date: April 11th, 2005

PROJECT:**EGAN FISH HATCHERY RACEWAY REPAIRS**

DFCM Project Number 04227520

DIVISION OF WILDLIFE RESOURCES

BICKNELL, UTAH

ARCHITECT:**P+A ARCHITECTS**

821 EAST KENSINGTON AVENUE

SALT LAKE CITY, UT 84105

The original Contract Documents issued for the above noted project are amended as noted in this Addendum. It shall be the sole responsibility of the bidder to appropriately disseminate this information to all concerned prior to the assigned bid time and date, and to coordinate the Addendum with the Contract Documents.

This Addendum consists of a total of (0) 8 ½"x11" AD- drawings.

If there are still unresolved questions after examining this addendum, please submit those questions via telephone or facsimile as soon as possible so that an addendum can be issued to clarify those issues in a timely manner.

Architectural Drawings:

1. General contractors shall note that the bid date has been changed from Tuesday, April 12th 2005 @ 3:30 p.m. to the following. The new bid date is April 14th, 2005 at 2:30 p.m. Bids must be submitted to the DFCM, 4110 State Office Building, Salt Lake City, Utah 84114.
2. See attached revised specification sections 03721 and 03930. General contractor shall delete old specification sections and replace with new. Specification section numbers have been changed to correlate with the existing drawing numbering.
3. See specification 07100, Section 2.1 Manufacturers. Remove under approved manufacturer number 2. Degussa – Omni Seal 50. General contractors shall be allowed to substitute in place of the Degussa – Omni Seal 50, Sika Flex 1-A

Civil Addendum Items:

1. None.

Structural Addendum Items:

1. None.

Mechanical Addendum Items:

1. None.

Electrical Addendum Items:

1. None.

Landscape Addendum Items:

1. None.
End of Addendum 1

SECTION 03721 – Cement Based Waterproofing for Concrete

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Provisions for applying cementitious, high-build, waterproof coating to above or below grade, exterior or interior masonry, brick, or cementitious surfaces indicated; including surface substrate testing, preparation and application.
- B. Related Sections
 - 1. Section 07100 - Dampproofing and Waterproofing

1.02 REFERENCES

- A. American Society for Testing and Materials (ASTM)
- B. Federal Specification and Standards

03 SUBMITTALS

- A. Submit:
 - 1. Submit manufacturer's technical bulletins and MSDS on each product.
 - 2. List of project references as documented in this specification under Article 1.04, Quality Assurance. Include contact name and phone number of person charged with oversight of each project.
 - 3. Sample of manufacturer's limited warranty and warranty application procedures.

1.04 QUALITY ASSURANCE

- A. Qualifications:
 - 1. Applicator:
 - a. Minimum of 5 years experience in the successful preparation for and application of cementitious coatings.
 - b. Successful completion of a minimum of 3 projects of similar size and complexity to the specified work.
 - 2. Manufacturer:
 - a. Minimum 5 years experience in manufacturing of cementitious products and acrylic admixtures.
- B. Mock-Up: Install at the project site a pre-selected job mock-up, 5 feet by 5 feet, using specified coating system. Obtain Architect/Engineer/Owner's approval of surface preparation, repair, color, texture, finish and workmanship as a standard by which remainder of the project will be judged. Apply material in strict accordance with manufacturer's written application instructions. Mock-up must be approved and accepted prior to start of system application. Maintain mock-up during construction for workmanship comparison. Do not alter, move or destroy mock-up until the work is completed and approved by the Owner's representative.
- C. Finish: Finish of cement based waterproofing for concrete shall be as smooth as possible.

1.05 DELIVERY, STORAGE AND HANDLING

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- A. Deliver, store, handle, and protect products in accordance with manufacturer's requirements.
- B. Comply with manufacturer's ordering instructions and lead time requirements to avoid construction delays.
- C. Deliver coating system materials in manufacturer's original, unopened, undamaged containers with identification labels intact.
- D. Store tightly sealed coating system materials off the ground and away from moisture, direct sunlight, extreme heat and freezing temperatures.

1.06 PROJECT CONDITIONS

- A. Substrate and ambient air temperature shall be a minimum of 40 degrees F (4 degrees C) and rising at application time and remain above 40 degrees F (4 degrees C) for at least 24 hours after application.
- B. Do not apply coatings in snow, rain, fog, mist or in hot, drying winds. Allow surfaces to attain temperature and conditions specified before proceeding with coating application.

1.07 WARRANTY

- A. Submit manufacturer's standard warranty form for specified system. Approval of warranty period and confirmation of system compatibility with substrate is required prior to system application.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Thoroseal by Degussa, Construction Chemicals
- B. XYPEX. MegaMix I
- C. Pre-approved equal by others
- D. Water: Drinkable
- E. Curing Compounds: As recommended by the manufacturer
- F. Rebar Coating: As recommended by the manufacturer

2.02 MATERIALS

- A. Performance Requirements: A two coat system for shall meet or exceed the following performance standards:

1. Compressive Strength	ASTM C 109-80	7 days = 4200 psi 28 days = 6030 psi
2. Flexural Strength	ASTM C 348-80	7 days = 360 psi 28 days = 1027 psi
3. Tensile Strength	ASTM C 190-77	7 days = 250 psi 28 days = 440 psi
4. Modulus of Elasticity	ASTM C 469	28 days = 2.75×10^6 psi

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5. Sand Abrasion Resistance	Fed Spec TT-P-141B	Passes at 3000 liters
6. Accelerated Weathering	ASTM G 26-77 ASTM G 23-77 Atlas Type DMC Weatherometer	5000 hours = No failure 500 hours = No failure No cracking, loss of adhesion, checking or other defect
7. Coefficient of Thermal Exp.	ASTM C 531	28 days= 5×10^{-7} mm/mm degrees C 6.99×10^{-6} in/in degrees F
8. Fungus Resistance	Fed Spec TT-P-29B	21 days = No growth
9. Salt Spray Resistance	ASTM B-117	300 hours = No defect
10. Wind Driven Rain Resistance	Fed Spec TT-P-0035 para 4.4.7	8 hours = excellent
11. Water Vapor Permeability	ASTM E 96	12 Perms
12. Impact Resistance	Fed Spec TT-P-0035	No chipping
13. Freeze Thaw Resistance	ASTM C 666B	200 cycles = No change
14. Surface Burning	ASTM E84-86	Flame spread 0 Smoke developed 5
15. Water Absorption	ASTM C 67 Sec. 7.3	3.6 percent at 24 hours Boiling water submersion
16. Hardness	Fed Spec TT-P-0035 para 4.4.9	7 days = 35 14 days = 47 21 days = 52

2.03 RELATED MATERIALS

- A. Sealant
 - 1. Refer to Section 07920 for Sealant requirements.

2.04 MIXES

- A. Mix coating system materials in accordance with manufacturer's printed recommendations and product technical bulletins. Mix with approved mechanical mixers to ensure homogenous distribution of materials.
 - 1. Prepare a mixing solution and dilution ration as per manufacturers requirements
 - 2. Mix as per manufacturers recommendations
 - 3. Do not use frozen, caked or lumped materials. Mix to consistency of smooth, heavy batter.
 - 4. Allow to rest as per manufacture recommendations

PART 3 EXECUTION

3.01 PREPARATION

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- A. Protect adjacent work areas and finish surfaces from damage during coating system application.
- B. Test and clean substrate in accordance with coating system manufacturer's recommendations and the following national standards:
 - 1. ASTM D 4258-83 (1988) Surface Cleaning Concrete for Coating
 - 2. ASTM D 4259-88 Practice for Abrading Concrete
 - 3. ASTM D 4261-83 (1988) Practice for Surface Cleaning Concrete Masonry for Coating
 - 4. ASTM D 4285-83 (1988) Indicating Oil or Water in Compressed Air
 - 5. ASTM D 4541-85 (1989) Pull-Off Strength of Coatings Using Portable Adhesion Testers
 - 6. ASTM D 4260-88 Practice for Acid Etching Concrete
 - 7. ASTM D 4262-83 (1988) pH of Chemically Cleaned or Etched Concrete Surfaces
 - 8. ASTM D 4263-83 (1988) Indicating Moisture in Concrete by the Plastic Sheet Method
- A. Substrate shall be sound, clean, dry and free of all dust, dirt, oils, grease, laitance, efflorescence, mildew, fungus, biological residues, chemical contaminants, previous coatings that could prevent proper adhesion. Removal shall be by approved methods demonstrated during mock-up.
- B. Chip, sand blast, shot blast or wet blast substrate to remove contaminants. Allow water blasted or water soaked surfaces to become saturated before application.
- C. Remove all loose, soft, friable mortar. Replace with cement based water proofing to match existing mortar. Cure replacement mortar 7 days.
- D. Treat, neutralize and remove efflorescence, mold, and mildew prior to coating application.
- E. Repair static cracks showing signs of active water leaks

3.02 APPLICATION

- A. Dampen substrate with clean, potable water prior to application. Surface shall remain damp during application.
- B. Apply cement based water proofing by spray, fiber brush or 10 inch broom to achieve prescribed surface texture and finish.
- C. Apply first coat of cement based waterproofing at a manufacturers recommended spread rate.
 - 1. Spray application shall be back-brushed or back-broomed into substrate to fill pores and voids.
- D. Maintain or place necessary expansion and control joints in structure to which cement based waterproofing is applied.
- E. Allow 24 hours before applying second coat
- F. Allow final application to air cure a minimum 7 days before back-filling or top-coating. Use moisture cure techniques if extreme hot, dry, or windy conditions exist.
- G. Match approved samples for color, texture and coverage. Remove, refinish or re-coat work not in compliance with Contract Documents.
- H. Finish smooth.

3.03 CLEANING AND PROTECTION

- A. Remove temporary coverings and protection of adjacent work areas. Remove over-spray coating

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from areas not intended to be coated. Remove construction debris from project site.

- B. Protect applied coating system finish from damage during construction.

END OF SECTION

SECTION 03930 – SPRAYABLE STRUCTURAL REPAIR MORTAR

PART 1 – GENERAL

1.01 RELATED DOCUMENTS

- A. See drawings and general provisions of the Contract including General and Supplementary Conditions, apply to this Section.

1.02 SUMMARY

- A. This Section specifies a one-component, thixotropic, rheoplastic, cement-based, fiber-reinforced, shrinkage-compensated, sulfate-resistant structural repair mortar with integral corrosion inhibitor.
- B. The product is shall be used for repairing concrete structures and can be applied by low-pressure spraying or hand troweling.

1.03 REFERENCES

ASTM C 109-90 (Modified)	Test Method for Compressive Strength of Hydraulic Cement Mortars.
ASTM A 185-85	Specification for Steel Welded Wire Fabric, Plain, for Concrete Reinforcement.
ASTM C 348-91	Test Method for Flexural Strength of Hydraulic Cement Mortars.
ASTM C 469-87	Test Method for Static Modulus of Elasticity and Poisson's Ratio of Concrete in Compression.
ASTM C 157 (Modified)	Test Method for Drying Shrinkage of Mortar Containing Portland Cement.
ASTM C 666-91	Test Method for Resistance of Concrete to Rapid Freezing and Thawing.
ASTM C 882-87 (Modified)	Test Method for Bond Strength of Epoxy Resin Systems Used with Concrete.
ASTM C 1012-89 (Modified)	Test Method for Length of Change of Hydraulic Cement Mortars Exposed to a Sulfate Solution.
ASTM C 1202-91	Electrical Indication of Resistance to Chloride Ion Penetration.

1.04 SYSTEM PERFORMANCE REQUIREMENTS

- A. Provide repair mortar that when cured produces the following properties:

1. Compressive Strength (ASTM C 109)	Minimum, 1-day 3,500 psi (24.1 MPa); 28-day 11,000 psi (75.9 MPa)
2. Flexural Strength (ASTM C 348)	Minimum, 1-day 650 psi (4.5 MPa); 28-day 1,300 psi (9.0 MPa)
3. Slant Shear Bond Strength (ASTM C 882, modified)	Minimum, 1-day 1,500 psi (10.3 MPa); 28-day 3,000 psi (20.7 MPa)
4. Permeability (ASTM C 1202)	772 Coulombs maximum @ 28 days
5. Drying Shrinkage (ASTM C 157, modified)	Maximum 0.9% shrinkage @ 28 days. 1 in. x 1 in. x 10 in. (25 mm x 25 mm x 250 mm) prism, air cured

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| 6. | Freeze-Thaw Resistance
(ASTM C 666, 300 cycles) | Minimum RDF 96.0% |
| 7. | Sulfate Resistance
(ASTM C 1012, 6 months) | Less than 0.10% expansion (maximum difference between control bars in water and test bars) |
| 8. | Modulus of Elasticity
(ASTM C 469) | 5.0 million psi (34.5 GPa) maximum @ 28 days |
| 9. | NSF Approval | |
| 10. | FDA Approval | |

1.05 PROJECT CONDITIONS

- A. Weather Conditions: Apply repair mortar only when ambient and surface temperatures are 45°F (7°C) and rising. Do not make the repair if the ambient temperature is expected to fall below 40°F (5°C) within 24 hours after placement. Do not apply repair mortar when ambient and surface temperatures are 100°F (38°C) and above.
- B. Follow manufacturer's recommendations regarding additional installation information for hot weather or cold weather installation.

1.06 QUALITY ASSURANCE

- A. Qualifications:
 - 1. Applicator:
 - a. Minimum of 10 years experience in the successful application of cementitious repair products.
 - b. Successful completion of a minimum of 5 projects of similar size and complexity to the specified work.
 - 2. Manufacturer:
 - a. Minimum 5 years experience in manufacturing of cementitious repair products.
- B. Mock-Up: At the project site a pre-selected job mock-up, using a minimum of 1 cubic foot of material for placement using restoration system. Obtain Architect/Owner's approval of surface preparation, repair, color, texture, finish and workmanship as a standard by which remainder of the project will be judged. Apply material in strict accordance with manufacturer's written application instructions. Mock-up must be approved and accepted prior to start of system application. Maintain mock-up during construction for workmanship comparison. Do not alter, move or destroy mock-up until the work is completed and approved by the Owner's representative.

1.07 RELATED DRAWINGS

See Drawings: 01/03721 & 02/03721

PART 2 – PRODUCTS

2.01 MATERIALS

- A. Repair Mortar: "EMACO® S88 CI" by MBT Protection and Repair
- B. XYPEX. MegaMix I
- C. Pre-approved equal by others
- D. Water: Drinkable
- E. Curing Compounds: As recommended by the manufacturer
- F. Rebar Coating: As recommended by the manufacturer

PART 3 – EXECUTION

3.01 SURFACE PREPARATION

- A. Mechanically remove unsound concrete to the limits indicated on the drawings.
- B. Remove a minimum of 1/4 in. (6 mm) of existing concrete facing and continue removal as required to expose sound aggregate. Substrate should have a minimum amplitude of 1/4 in. (6 mm). Limit the size of chipping hammers to 15 lb. (6.8 kg) to reduce micro fractures.
- C. Where reinforcing steel with active corrosion is encountered, comply with the following:
 - 1. Abrasive blast reinforcing steel to remove rust, scale and contaminants to achieve a white metal finish.
 - 2. If half or greater of the diameter of the reinforcing steel is exposed, chip out behind the reinforcing to a 3/4 in. (19 mm) minimum depth.
 - 3. Splice new reinforcing steel to existing steel where corrosion has depleted the cross-section area by 25%, as directed by the Architect/Engineer.
- D. Thoroughly abrade the roughened surface and exposed reinforcement to remove all bond-inhibiting materials such as: rust, dirt, loose chips, and dust. Maintain substrate in a saturated, surface dry condition.
- E. Coat exposed reinforcing steel with approved rebar protection prior to patching.

3.02 USE OF MESH

- A. When applying product in repairs greater than 10 lineal feet (3 m) in the longest direction or in overlays at depths of 1 in. to 1-1/2 in. (25 to 38 mm) or greater 3 - 4 and for overhead applications of the same size 3 - 4, a 4 in. x 4 in. low gauge mesh (10 to 12 gauge) must be firmly tied to the properly prepared substrate.
- B. Locate the mesh no closer than 3/8 in. (10 mm) and no more than 1 in. (25 mm) from the finished surface, using spacers and concrete anchors. A minimum cover of mortar over the mesh should be 3/8 in. (10 mm).
- C. Mesh is not necessary in applications where side restraint exists, such as in square cut patches or where existing reinforcement will provide adequate restraint.

3.03 MIXING

- A. Comply with mortar manufacturer's recommendations for water quantity and mixing procedures.

3.04 APPLICATION

- A. Maintain substrate in a saturated, surface-dry condition.
- B. For hand applications, a bond coat is required.
- C. Apply repair mortar by low pressure wet spraying or hand troweling on vertical or overhead surfaces in depths ranging from 3/8 in. (10 mm) to 2 in. (51 mm).
 - 1. Vertical Applications: Repair mortar can be applied on vertical applications up to a 2 in. (51 mm) depth per lift.
 - 2. Multiple Passes: Place succeeding lifts after repair mortar has developed initial set. Scarify the surface of the first lift to ensure integral bond between successive layers.

3.05 FINISHING

- A. Level surface of repair mortar using a float or screed.
- B. Apply final finish when mortar has begun to stiffen using a wooden, plastic, or synthetic sponge float or trowel. Get finished surface as smooth as possible.
- C. Spray apply undiluted "CONFILM®" evaporation reducer lightly to aid in finishing, especially in windy, hot conditions.

3.06 CURING

- A. Protect fresh mortar from premature evaporation. Cure finished repair mortar by one of the following methods:
 - 1. Preferred Method: Keep area continuously moist with water as soon as mortar surface has hardened (thumb print hard), for a minimum of seven days.
 - 2. Acceptable Method: Apply curing compound as recommended by manufacturer.

END OF SECTION 03721